

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

Jan. 13, 1863.—George Busk, Esq., F.R.S., in the Chair.

DESCRIPTIONS OF FIVE NEW SPECIES OF FISHES OBTAINED AT MADEIRA. BY JAMES YATE JOHNSON, CORR. MEM. Z. S.

Fam. SCOMBRIDÆ.

BRAMA PRINCEPS, sp. n.

D. 5.27-33. P. 20. V. 1.5. A. 3.26. C. iv. 15. iv. M. B. 7.

Body oval, compressed, and elevated, the height compared with the length being as 1 to $2\frac{1}{2}$ or $2\frac{2}{3}$. It is of a blackish-grey colour, beautifully reflecting white and iridescent hues. A coppery lustre is reflected in certain lights from the sides of the body and the head. The hinder portion (black) of the body is covered with large striated scales; those on the head have finely pectinated edges, those on the body have simple borders. Between and in front of the eyes the head is scaleless.

The head is short and abrupt; its length to that of the whole fish is as 1 to $2\frac{2}{3}$. The *eye* is vertically oval; the pupil a pale grey, the iris a dark brown. It is contained about $4\frac{1}{2}$ times in the head, and is removed from the muzzle by a space equal to about $1\frac{1}{3}$ times its longer axis. Above it there is a space equal to $1\frac{1}{2}$ times its longer axis, and below it a space equal to twice that axis. There is only one opening on each side to the pituitary sac, and that is small and transversely oval. The mouth-cleft is small and subvertical; the under jaw rather longer than the upper. The superior border of the mouth is formed by the narrow premaxillary, much of which, when the mouth is closed, passes underneath the maxillary. The latter is much dilated below, and its exposed portion is triangular. It reaches back to the vertical from the middle of the eye. There are small scales on the premaxillary, and large ones on the maxillary. There is a broad band of small, conical, slightly curved teeth, narrowing backwards in each jaw, the innermost row being slightly longer. There is also a narrow band of small teeth on the palatines; but the vomer and tongue are unarmed. The tongue is broad, fleshy, and black. Inside the teeth in each jaw there is a black flap extending from one side of the mouth to the other. The opercular pieces are clothed with scales, and their margins are unarmed and rounded.

The long *dorsal* fin is very high and falcate in front, this portion being covered with small scales. The fin is low behind, and near its termination the broadly expanded apices of the rays project beyond the membrane. The length of the fin, compared with the total length of the fish, is as 1 to $2\frac{1}{7}$. The *pectoral* fins are long, pointed, and subfalcate, and they reach back as far as the middle of the dorsal fin. The base is clothed with small scales; and in the axil there is a membrane bearing eight or nine scales, which connects the upper

side of the base with the side of the body. When the fin is pulled away from the body, these scales spread out and cover up the hollow of the axil. The *ventral* fins are inserted under the bases of the pectorals; they are short, and their apices are truncate. The spine is very short, and there is a scale-like appendage in the axil. The long *anal* fin resembles the dorsal in shape, being high and falcate in front; the falcate portion scaly; the hinder portion low, with the rays projecting beyond the membrane. It terminates on the vertical of the termination of the dorsal. The *vent* is placed a little before the commencement of the anal fin. The *caudal* fin is lunate, and has a wide spread; its base is scaly.

The middle portion of the tail is raised or thickened longitudinally, so as to form a kind of flat, broad keel. Near the base of the caudal fin there are some transverse grooves above and below.

Forty-five rows of scales may be counted between the border of the opercle and the base of the caudal fin, and on the fin itself there are nine or ten rows of small scales. There are about twenty-five series of scales in the height of the body. The scales are very broad, and their surfaces are radiate-striate, *without the slightest trace of an umbo or spine*.

One of the examples, measuring $32\frac{1}{2}$ inches in length, proved on being opened to be a female, and had an egg-sac $3\frac{1}{2}$ inches long and $1\frac{3}{4}$ inch across. There were five stout pyloric cæca, four of which were 3 inches long, the fifth only half as long. The intestine was convoluted, and 22 inches in length. The stomach was small; the liver of moderate size; the gall-bladder large.

The fishermen call this handsome fish "Freira do alto," *Brama Raii* being called "Freira." Several specimens have been taken in the months of February and March, the lengths of which ranged from 27 to 33 inches.

In form it bears a close general resemblance to *Brama Raii*, which, however, is less thick in proportion, has much smaller scales, and is without the broad ridge at each side of the tail and the white borders of the vertical fins. Moreover in that species the anterior portions of the dorsal and anal fins are much less developed. If admitted into the genus *Brama*, the definition of that genus given in Dr. Günther's Catalogue will require modification in regard to the size of the scales, the number of the dorsal spines, and the jaw-teeth, which are there said to have an outer series of stronger teeth. No such series is discoverable in the species now described.

The following measurements were taken from two examples of nearly the same length :—

	A.	B.
	inches.	inches.
Total length	$32\frac{1}{2}$	33
Height	13	13
Thickness under anterior part of dorsal.	4	4
Length of body without caudal.	25
Head	$6\frac{1}{2}$	$7\frac{1}{2}$
Eye, diameter.	$1\frac{3}{4}$

	A. inches.	B. inches.
Teeth, width of band in jaws	$\frac{9}{20}$	
Rictus		$2\frac{7}{10}$
Dorsal, distance from muzzle	$8\frac{3}{4}$	$10\frac{1}{4}$
——, length of base	14	
——, height in front	6	$7\frac{1}{2}$
Pectorals, distance from muzzle	$7\frac{1}{2}$	
——, length		$8\frac{7}{8}$
Ventrals, length	$1\frac{1}{4}$	$1\frac{1}{2}$
Anal, length	$10\frac{1}{2}$	
——, height in front	6	
——, distance from muzzle		$14\frac{1}{2}$
Caudal, expanse	12	12
Scales of body, width	$1\frac{1}{2}$	

Fam. TÆNIODEÆ (LOPHOTIDÆ, Günther).

LOPHOTES CRISTATUS, sp. n.

D. about 255. P. 13. V. 5. A. 19. C. 15. M. B. 6.

Elongated, compressed, blade-like; the line of the unarmed belly nearly straight; the back curving upwards slightly for the first third, then falling gently to the tail. The height of the body, compared with the length, is as 1 to $5\frac{1}{4}$. The colour is uniformly a silvery grey, without spots. The body is clothed with simple scales, which are buried in the skin, and set obliquely so as to give a reticulated appearance. They are rather large and very delicate.

The head is short and unarmed; it bears a high fleshy crest, the horizontal line of which is straight with the back. This crest carries the anterior portion of the dorsal fin, and it projects, at an acute angle, beyond the vertical of the snout. At the angle rises a single bony ray, which is equal in length to one-fourth of the total length of the fish. A fringe of red membrane connects it with the dorsal fin, of which it appears to be the first ray. The edges of the gill-covers are simple, the bones radiate-striate. The round *eye* is large, its diameter being contained three times in the head; the iris is silvery white, the pupil oval. The space intervening between it and the front of the head above the jaw is much less than a diameter; but the space between the edge of the capital crest and the superior part of the orbit is considerably more than a diameter. The space between the eye and the snout is reddish and scaleless. The *mouth* is oblique and rather small; the rictus about two-thirds the diameter of the eye, and its width almost equal to a diameter. There are about four rows of small conical-pointed *teeth*, which curve backwards, at the front of the premaxillary; and about two rows of similar teeth at the sides of the lower jaw, whilst in front they are crowded four or five deep. Small teeth, very few in number, are planted on the vomer and on the anterior extremities of the palatine bones; but there are none on the tongue. Inside the mouth, above and below, there is stretched a black membrane from side to side. The maxil-

lary is toothless, and is much dilated below. It covers the pre-maxillary at the sides, and reaches back to the vertical through the middle of the eye.

The single *dorsal* fin extends from the capital crest to the caudal fin, from which it is not easily distinguished. Behind the long bony ray, already mentioned, it is low, the middle portion being higher than the rest. The base is sheathed in transparent membrane, an extension of the skin. The *pectoral* fins are of moderate size, placed low down, and at a distance from the top of the lower jaw equal to about an eighth of the total length of the fish. The first ray is bony and very strong, but not longer than the rest, which are branched. The *ventral* fins are very short, and are inserted a little behind the pectoral fins, and only slightly below them. Only five, slender, simple rays were counted in the specimen. The *anal* fin is low, it is placed far behind, near the caudal fin, and its first three or four rays are short. The *vent* is placed just before the fin. The tail, behind the anal fin, has parallel margins, and is much compressed. It is low, and its lower edge is finless; whilst its upper edge carries the posterior portion of the dorsal fin. The *caudal* fin is short, and is not well distinguished from the dorsal fin; but there seem to be fifteen rays, viz. ten below the lateral line and five above. The lower angle only projects. This fin is not set on obliquely, as in some of the genera of the family.

The unarmed *lateral line* descends at an angle of 45° from the angle of the capital crest to behind the eye; it is then straight along the body to the base of the caudal fin.

The *stomach* is cæcal, narrow, and tapers downwards. Numerous cæca are attached to the intestine. The intestinal canal is long and straight; the egg-sac long and forked; the liver of moderate size. The stomach of the specimen examined contained the much-digested remains of a small fish and a Cephalopod.

Only a single individual of this curious fish has occurred. The single species of the genus hitherto known, a Mediterranean fish (*Lophotes Cepedianus*, Giorna), appears to be likewise very rare; for M. Valenciennes (Hist. Nat. des Poiss. x. 401) says that only three specimens had been examined by naturalists, two of which had been deposited in the Museum at Turin, and the third in the Museum at Paris. In the British Museum are two stuffed specimens and one preserved in spirits. The differences between the Madeiran fish and the Mediterranean fish (as described in the Hist. Nat. des Poiss.), which seem to justify the formation of a new species, are these:—In the latter the height, compared with the length, is said to be as 1 to 7; and the thickness, compared with the height, as 1 to 3; whereas in the Madeiran fish the height is to the length as 1 to $5\frac{1}{4}$, and the thickness to the height as 1 to 6. Moreover, Valenciennes says the skin is without scales, that its silvery-grey colour is relieved with round spots of pure white, and that all the fins are of a lively rose. Now the skin of the fish here described possesses scales, and the colouring of the body and fins is a uniform grey. I may add that I have examined the fish preserved in spirits at the British

Museum, but I could not detect any scales in the skin. The dimensions of the specimen, which will hereafter find its way to the British Museum, are given in the following table:—

	inches.
Total length	50
Height (14 inches from snout)	$9\frac{1}{2}$
Height of head through the eye	$7\frac{3}{8}$
Thickness for the greater part of body	$1\frac{1}{2}$
Head	$6\frac{1}{2}$
Eye, diameter	$2\frac{1}{8}$
—, distance from front of head	$1\frac{1}{2}$
—, distance from edge of crest	$3\frac{8}{10}$
Mouth, rictus	$1\frac{1}{2}$
—, width	2
Teeth, length	$\frac{1}{10}$
Maxillary, width below	$\frac{3}{4}$
Dorsal, length of first ray	$12\frac{1}{3}$
—, height of middle portion	2
Pectorals, length	$3\frac{1}{2}$
—, distance from tip of lower jaw	$6\frac{1}{2}$
—, distance from lower edge of body	$1\frac{1}{4}$
—, width of base	$\frac{8}{10}$
Ventrals, length	$\frac{1}{2}$
—, distance from root of pectorals	$\frac{7}{10}$
Anal, height	$\frac{8}{10}$
—, distance from caudal	$1\frac{1}{2}$
Tail, height	$\frac{7}{10}$
Caudal, length at lower angle	$1\frac{1}{10}$

Fam. SCOPELIDÆ.

SAURUS ATLANTICUS, sp. n.

1st D. 13. 2nd D. adipose. P. 11. V. 8. A. 9. C. 18.
M. B. 16.

Form of *Saurus Lacerta*, i. e. elongate and cylindrical. The height, compared with the length, is as 1 to 7 nearly. The head, cheeks, and back are of a dull red colour, with irregular patches of bluish purple. The belly is white, as well as the sides, which, however, are variegated with irregular patches of dull red and brownish yellow, arranged alternately and longitudinally. The rays of the first dorsal fin are spotted with red. The anal fin is blotched with reddish marks in transverse lines, and with some opaque white marks. The cycloid scales are of moderate size.

The long, depressed, unarmed *head* is contained in the total length about $4\frac{1}{4}$ times. The space between the eyes is hollowed, and the head behind the eyes is flat and marked with radiating striæ. Near the tip of the muzzle there is a shield-shaped depression. There are scales on the cheeks, and the opercle is bordered with a transparent membrane. The *eye* is nearly round; its diameter is equal to one-seventh of the head, and it is distant about two diameters from the tip of the muzzle. It is placed rather before the middle of the upper

jaw, and the upper part of the orbit forms part of the profile. The space between the eyes is rather less than a diameter. The lower jaw is more pointed than the upper, the upper rather longer than the lower. The rictus is long, being equal to the height of the fish, and extending much beyond the eyes. The upper border of the mouth is formed entirely of the strong and thick dentiferous premaxillary, the much weaker maxillary lying behind. Both bones are covered, like the bones of the lower jaw, with a thick scaleless skin. In the lower jaw there are two rows of small slender teeth with hastoid apices; those of the inner row are larger, they are rather distant from each other; and in the intervals are set some very much shorter teeth of the same shape. All these teeth are directed inwards. In the upper jaw there are also two rows of similarly shaped teeth, which are about equal in size to those of the inner row in the lower jaw. The teeth of the inner row are moveable. On the tongue are several irregular rows of slender teeth, directed backwards. On the palatines are about three rows of acicular moveable teeth, which are more slender than those of the jaws. There are also teeth on the pharyngeal arches, but none on the vomer.

The gill-openings are large, and the branchiostegal membrane is supported by sixteen rays on each side.

The *first dorsal* fin has a trapezoidal shape, and rises from a shallow groove posterior to the base of the ventral fins. It is short, and terminates over the middle of the body. The two first rays are unbranched; the longest rays are the second and third, which neither equal the height of the trunk nor the base of the fin. The minute *second dorsal* fin is adipose, without rays, and is placed over the middle of the anal fin. The *pectoral* fins are about one-eleventh of the total length of the fish, and about half as long as the ventral fins; the first ray is shorter than the succeeding three, but longer than the last. The *ventral* fins are inserted about halfway between the pectoral and first dorsal fins. Their length is about one-fifth of the total length of the fish. The lower rays are longer, the last but one being the longest in the fin. The *vent* is far behind, being three-fourths of the length of the fish, minus the caudal fin, from the muzzle. The *anal* fin is short, and rises out of a shallow groove. The *caudal* fin has eighteen rays, besides short external rays. On each face of this fin there are two scale-like appendages, such as are seen in *Saurus Lacerta* ("un appendice écailleux prolongé en une petite palette."—*Valenciennes*).

The *lateral line* is straight, and is placed rather above the middle of the body.

This description has been drawn up from a single specimen, obtained in the month of April, which has been sent to the British Museum. Another example, taken in May, only a trifle more than 3 inches long, had fourteen rays in the first dorsal fin, and ten rays in the anal fin. There was a distinct dark spot at the tip of the muzzle.

The fish described by Mr. Lowe, in the 'Trans. Zool. Soc.' vol. ii. p. 183, under the name of *Saurus griseus*, is not to be distinguished from *S. Lacerta*, as defined by Valenciennes (Hist. Nat. des Poiss.

vol. xxii. p. 463); and to the same species is to be assigned the fish described by Valenciennes, in his 'Ichthyologie Canarienne,' under the name of *S. trivirgatus*. Both these forms have been obtained by me at Madeira.

The following are the dimensions of the larger of the two specimens of *S. atlanticus* :—

	inches.
Total length	11
Height	$1\frac{6}{10}$
Head	$2\frac{6}{10}$
Eye, diameter	$\frac{7}{10}$
First dorsal, distance from muzzle	4
— — —, longest rays	$1\frac{1}{10}$
Second dorsal, height	$\frac{3}{10}$
— — —, width	$\frac{3}{20}$
Pectorals, length	1
Ventrals, length	2
— — —, distance of their vertical from muzzle	$3\frac{1}{4}$
Vent, distance from muzzle	$7\frac{1}{2}$
Anal, height	$\frac{8}{10}$
— — —, length of base	$\frac{9}{10}$
— — —, distance from base of ventrals	$4\frac{1}{4}$
Caudal, length	$1\frac{1}{10}$

SCOPELUS CAUDISPINOSUS, sp. n.

1st D. 26. 2nd D. adipose. P. 12. V. 9. A. 19. C. viii.
10 + 11. vii. M. B. 10.

Body slender, with the head of a peculiar aspect, from the steep profile, the forward eye, and the deep mouth-cleft. The height is to the total length as 1 to 7, and the thickness about one-twelfth of the total length. The scales are cycloid.

The *head* curves rapidly downwards in front of the eyes, forming a quadrantic profile. Compared with the total length, it is as 1 to $4\frac{1}{2}$. It is scaleless, unarmed, and arched above. The *eye* has a diameter equal to about one-fifth of the length of the head, and is placed less than half a diameter distant from the muzzle, which is short, blunt, and truncate. The oral cleft is oblique, and reaches much beyond the eyes. The upper border of the mouth is formed by the premaxillary, the slender maxillary lying behind. There are villiform bands of *teeth* in each jaw, on the palatines, and on the pharyngeals, as well as three longitudinal bands on the tongue, the middle one widening backwards. There are also patches of similar teeth on the entopterygoids; but the vomer is unarmed. The rakers of the branchial arches carry small teeth. The gill-openings are large, and the gill-covers are of a dark blue colour inside; the opercle has an angular form near the root of the pectoral fin.

The *pectoral* fin is small, being to the total length as 1 to $11\frac{1}{2}$. It is inserted low down, and reaches nearly to the root of the ventral fins. The *first dorsal* fin is placed at the middle of the back. It is higher in front, but its height does not equal that of the fish. The

abdominal *ventral* fins are inserted under the anterior part of the first dorsal; they do not reach quite so far back as the commencement of the anal fin. The *anal* fin is of moderate length; it commences under the middle of the first dorsal fin. On the upper edge of the tail there are eight small sharp spines, followed by two larger spines; on the lower edge are nine small spines, followed by two larger ones.

The single example of this fish that has occurred (taken in the month of February) was so much damaged that little can be said about the scales or colour. It appeared, however, to have been nearly black; but there were no traces of silvery spots on the sides. The muscles abounded with oil.

It appears to be nearly allied to *Scopelus Crocodilus*, Valenciennes, who assigns twenty rays to the first dorsal and eighteen rays to the anal fins of that species (H. N. Poiss. xxii. 447). Of that fish it is stated that the eye is contained $3\frac{1}{2}$ times in the head, and that the pectoral fins do not reach to the ventral fins. No dark blotch at the base of the caudal fin was observed in my fish. It would seem to fall into Rafinesque's subgenus *Myctophum*; but it is distinguishable from all the four species described and figured in the 'Fauna Italica,' by the greater length of the first dorsal fin, and by the larger number of rays in that fin, which, in the four species referred to, range from twelve to seventeen.

The following are the dimensions of the example which has been sent to the British Museum:—

	inches.
Total length.....	$6\frac{1}{3}$
Height under first dorsal	$\frac{9}{10}$
Thickness.....	$\frac{1}{2}$
Head	$1\frac{4}{10}$
Eye, diameter	$\frac{3}{10}$
Mouth-cleft, length.....	$\frac{9}{10}$
First dorsal, distance from muzzle	2
—— ———, height.....	$\frac{9}{10}$
—— ———, length of base.....	$1\frac{8}{10}$
Pectorals, length	$\frac{6}{10}$
Ventrals, length	$\frac{7}{10}$
———, distance from tip of mandible	2
Anal, length of base	$1\frac{1}{5}$
——, distance from tip of mandible	$2\frac{9}{10}$
Caudal, length.....	$1\frac{1}{10}$

NEOSCOPELUS, gen. nov.

Oblong, compressed, covered with large caducous scales. First dorsal fin placed over the abdominal ventral fins. The pectoral fins long; their inferior rays not thicker than the rest. Mouth-cleft not extending beyond the eyes. The maxillary dilated below, and furnished with a small supplementary piece. The upper border of the mouth formed entirely of the premaxillary. Scobinate bands of teeth in both jaws, on the palatine bones, and on the vomer; scobi-

nate patches of teeth on the entopterygoids. Branchiostegal membrane with nine rays.

This new genus is allied to both *Aulopus* and *Scopelus*. In its moderate number of branchiostegal rays and scopeloid form of body it approaches the latter genus; the shape of the teeth and the dentiferous vomer ally it to the former. From *Odontostomus* it is distinguished by the moderate size of the eye and the immobility of the teeth; from *Lampanyctus* by the greater height of the body and by the comparatively short rictus, which, in that genus, extends much beyond the eye.

NEOSCOPELUS MACROLEPIDOTUS, sp. n.

1st D. 4.9. 2nd adipose. P. 18. V. 8. A. 13. C. iv. 10+9. iii. B. M. 9. Scales of lateral line 30.

Oblong, compressed, the height contained $4\frac{1}{2}$ times, and the thickness 10 times in the total length. Back and sides dark red, becoming uniformly fuscous in spirit; cheeks silvery; throat and belly black; the scales on the belly having a pearly iridescent centre, and forming about five longitudinal rows of spots; all the fins a pinky red, approaching scarlet. None of the fins, except the caudal, are scaly.

The *head* is contained rather less than four times in the total length. It is somewhat compressed, and the cheeks are flat. On the vertex, above the posterior margin of the eyes, are two small spines. The opercular pieces, the head between the eyes, and the jaws are scaleless. The upper part of the opercle is marked by a low longitudinal ridge. The neck and shoulder are rather high. Between the eyes are two broad, shallow, longitudinal grooves, with two low ridges between them. This part has an adipose or gelatinous appearance, and it is marked with some twenty or more transverse beaded lines, and in the neighbourhood of the eyes with numerous gelatinous papillæ. The round *eye*, the iris of which has a golden-greenish colour, is contained about five times in the head, and is placed at a distance of not quite a diameter and a half from the tip of the muzzle. It is surrounded by an adipose border, which intrudes upon it at the antero-superior side, and which has a small notch at the posterior side. The distance from eye to eye is nearly equal to a diameter and a half. The nostrils are close together, and placed halfway between the eye and the jaw; the hinder one of each pair is large. The muzzle is rounded, and short but not abrupt. There is a protuberance on the premaxillary, behind the symphysis of the jaw. The under jaw projects slightly beyond the upper. The upper border of the mouth is formed entirely of the premaxillary, behind which is the toothless maxillary, having a length one-half that of the head. The latter is dilated below, is furnished with a very small and narrow supplementary piece, and extends back to the vertical from the posterior border of the eye. There is a scobinate band of teeth on each jaw, the inner rows being rather larger and almost cardiform. A portion of these dental bands is seen outside the mouth when it is closed. A narrow band of similar teeth

is found on the palatines, and a chevron-shaped patch on the vomer. The thick tongue is toothless in front ; but behind there is a narrow band of small teeth along the middle as far as the branchiæ extend. On the entopterygoids there are large oval patches of minute teeth. On the outermost free branchial arch are long rakers, of which one edge is set with a band of minute teeth ; and on its hinder surface is a series of short rakers, the apices of which bear numerous minute teeth. The other branchial arches bear short stout rakers, which have teeth at their ends ; and the hinder faces of these arches have similar processes to those of the first arch.

The tongue, the mouth, and the insides of the gill-covers are bluish black. The gill-openings are large. The delicate branchiostegal membrane is supported by nine rays, of which the first is hair-like, and the last very broad, with a raised posterior edge. The *first dorsal* fin has a trapezoidal shape, and is placed well forward over the ventral fins. The four first rays are unbranched, and the first of these is very short. The longest ray is the fifth, and this is about two-thirds the length of the head. The *second dorsal* fin is adipose and scaleless ; it is placed over the hinder part of the anal fin. The *pectoral* fins are longer than the ventral fins. They have about two-thirds of the height of the fish above their bases, and they reach back beyond the end of the first dorsal fin, but not quite so far as the vent. Their inferior rays are not thicker than the rest. The abdominal *ventral* fins have stout rays, and the first one is unbranched and shorter than the next three, which are about equal to each other. The abdomen is flat between the roots of these fins. The *vent* is immediately in front of the trapezoidal *anal* fin, the first ray of which is unbranched and very short ; the fourth ray is the longest. The *tail* is much compressed. The *caudal* fin is deeply furcate, spotted with minute black spots, and covered with small scales.

The distinct *lateral line* descends rather rapidly from the shoulder ; but from the pectoral region it is straight along the middle of the body. The caducous scales which clothe the body are large and remarkably broad, with the exposed margins armed with several rows of small spines. Those of the lateral line are about thirty in number, and in the height of the body ten rows may be counted, viz. four above, and five below the lateral line, which is itself formed of the tenth row.

Of this species only a single example (now in the British Museum) has occurred, and this was taken in the month of January. Its dimensions are given below :—

	inches.
Total length	10 $\frac{5}{10}$
Height, a little in front of first dorsal	2 $\frac{3}{10}$
Thickness	1 $\frac{1}{8}$
Head	2 $\frac{3}{4}$
Eyes, diameter	$\frac{1}{2}$
—, distance apart	$\frac{7}{10}$
Mouth, width behind when open	1
—, length of upper jaw	1 $\frac{3}{8}$

	inches.
First dorsal, distance from muzzle	3 $\frac{3}{4}$
— — — — —, length of base	1 $\frac{3}{8}$
— — — — —, length of first branched ray	1 $\frac{3}{8}$
— — — — —, length of last ray	1 $\frac{3}{8}$
Second dorsal, height	1 $\frac{1}{2}$
— — — — —, distance from first dorsal	1 $\frac{3}{4}$
Pectorals, length	2 $\frac{1}{2}$
— — — — —, distance from muzzle	2 $\frac{5}{8}$
— — — — —, width of base	1 $\frac{4}{10}$
Ventrals, length	1 $\frac{1}{2}$
— — — — —, distance behind pectorals	1
Vent, distance of vertical from muzzle	5 $\frac{8}{10}$
Anal, length of fourth ray	1 $\frac{1}{4}$
— — — — —, length of base	1 $\frac{1}{8}$
— — — — —, distance from ventrals	2 $\frac{3}{8}$
Tail, height	1 $\frac{7}{8}$
Caudal, length	2

Jan. 27, 1863.—G. R. Waterhouse, Esq., V.P., in the Chair.

ON THE OPHIDIANS OF THE PROVINCE OF BAHIA, BRAZIL.

By DR. OTHO WUCHERER, CORR. MEMB. (Part III.*)

The Dryadidæ which I have here been able to obtain belong to two genera—*Herpetodryas* and *Philodryas*†. The specimens of *Herpetodryas* were in very considerable number, but I am disposed to consider them all belonging to *H. carinatus*. They showed many varieties as regards their scales; some appeared to possess no keels at all, indeed the keel was almost effaced, and barely perceptible, on very close inspection, in a few only of the scales. But these specimens agreed in every other respect so much with undoubted specimens of *H. carinatus* that I could not help considering them specifically the same, and supposing Schlegel was right in not regarding *H. fuscus* as a species. *H. carinatus* is one of the few Snakes possessing the peculiarity pointed out by Reinhardt, that, though they have keeled scales, these have but one groove at the tip. The groove is often very indistinct in *H. carinatus*, and to be found only on some of the scales of the neck.

Of the genus *Philodryas* I have seen two species—*Philodryas Reinhardtii* and *P. Olfersii*. Of these, the former is by far the most common in our neighbourhood. Soon after my attention was drawn to the small grooves on the scales, I found that all my specimens of *P. viridissimus* had but one groove on each scale. I therefore thought Reinhardt was wrong in stating this Snake to have two grooves, until Dr. Günther showed that there were two species comprehended under the name *P. viridissimus*, to the one of which with two grooves he has left the name *viridissimus* (Surinam), establishing the other with one groove as a new species—*P. Reinhardtii* (Brazil).

* See 'Annals,' 1861, vol. viii. p. 179; 1862, vol. ix. p. 251.

† [To these we may now add the genus *Dromicus*; see page 325.—A. G.]

Of *P. Olfersii* I have seen about half-a-dozen specimens. One was sent to me lately from Rio de Janeiro, the rest were from this province.

Of the family Dendrophidæ a single species, *Ahætulla liocerca*, has come to my notice, but in few specimens. One was sent to me from Rio de Janeiro; when alive, it is a very beautiful animal.

The family of Dryiophidæ is represented in this province by two species of the genus *Dryiophis*—*D. argentea* and *D. acuminata*, of which the former seems to be very scarce, whereas the latter is exceedingly common. I have nothing to add to what is already known of these animals. I have repeatedly tried to keep live specimens in confinement, but they all soon perished, after incessant disquietude, without ever taking food of any kind.

The Brazilian Dipsadidæ are all, as far as I have been able to ascertain, of nocturnal habits. During the day, specimens are found only in dark, sheltered places; at night they are frequently met with abroad. A specimen of *Leptodeira annulata*, which I kept for a long time in confinement, was never visible during the day, being hid in a crevice of its cage, but soon after sunset it became very lively. I never saw it take any food; and it died after several months' confinement, probably from inanition. This species is very frequently found close to dwellings and in the thatch of houses.

Of *Thamnodynastes Nattereri* I have obtained a great many specimens; but of *T. punctatissimus* only a few from Cañavieras.

My statement to Dr. Günther, that I had seen a specimen of *Eudipsas leucocephalus*, was founded on a mistake; no specimen of this species has yet come to my notice.

Leptognathus Catesbyi is not very scarce. Of *L. Mikanii* I have only lately received specimens from Caravellas.

The Brazilian species belonging to the family Scytalidæ are numerous. Of *Scytale coronata* I have seen only the variety B. of Dr. Günther's Catalogue. It is exceedingly common, and very remarkable for the different changes of coloration it undergoes by age. Young specimens are of a pale pink colour; adults are of an almost uniform black colour above, and white beneath. It lives, like all the members of this family, on lizards, chiefly on our most common species, *Trachycyclus marmoratus*. I have frequently had specimens of *Scytale* and *Oxyrhopus* alive for months; they are all of seminocturnal habits, and pursue their prey, not during the night, but at beginning of dusk, or a short time before sunset. On seizing they seldom crush their victims, unless these offer strong resistance; and considering how vigorous and tenacious of life lizards are, I have often been surprised at the little resistance they offer when caught even only by a leg. They seem paralyzed. If they struggle, the snake quickly throws a coil or two over them; if not, they allow their pursuer, after a little while, to relinquish its hold and to seize them deliberately by the head. Is it that the Snakes with grooved teeth are, after all, not quite innocuous, at least for cold-blooded animals? I was once severely bitten by a *Philodryas Reinhardtii* without feeling the slightest subsequent inconvenience.

Of the genus *Oxyrhopus* I have seen the following species:—*O. Clælia*, *O. formosus*, *O. petolarius*, *O. immaculatus*, and *O. trigeminus*. The last-named one and *O. petolarius* are the most common. Of *O. immaculatus* I have seen a single specimen.

Of the family Elapidæ two species are very common—*Elaps lemniscatus* and *E. corallinus*. The variety of the latter with white-edged black rings never attains but a small size; it differs also in coloration from the others, being brick-red. I am therefore inclined to consider it as a distinct species—the *E. circinalis* of Dum. and Bibron.

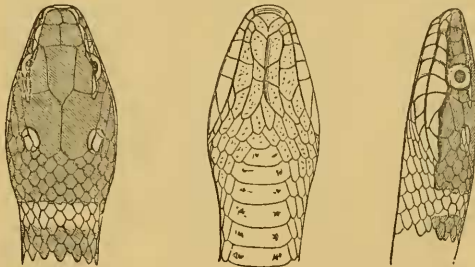
ADDITION TO DR. WUCHERER'S ARTICLE ON THE OPHIDIANS OF BAHIA. BY DR. A. GÜNTHER, F.Z.S., ETC.

Almost simultaneously with the concluding part of Dr. Wucherer's paper "On the Ophidians of Bahia," I received from him a small Snake, which on examination proved to be a new species of the genus *Dromicus*.

Mr. Cope has lately* pointed out the complete gradation existing between the most slender species of *Dromicus* and the stout forms of the genus *Liophis*, dividing them into six divisions, characterized by the structure of the scales and by the relative length of the tail†. This new species would enter the division *Lygophis* of his arrangement, having the scales without grooves, and a tail the length of which is one-fourth of the total.

DROMICUS (LYGOPHIS) WUCHERERI, sp. nov.

Scales in fifteen rows. Loreal square; one præorbital, reaching to the upper surface of the head, but not touching the vertical; two



postorbitals; eight upper labials, the third, fourth, and fifth entering the orbit (the third with its posterior angle only); the seventh labial forms only a small portion of the lip, and on one side it is

* Proc. Acad. Nat. Sc. Philad. 1862, p. 75.

† Mr. Cope's general observations on the species of these genera are perfectly correct, and the divisions proposed by him are most convenient for the determination of the species, but they do not appear to me to be more natural groups than those which we had before; for instance, *Liophis Reginae* is certainly more closely allied to *L. Merremii* and to *L. Cobella* than to *Dromicus Temminckii*; yet *L. Reginae* and *D. Temminckii* are united into one group, and the two others into another. *L. conirostris* cannot be separated from *L. Reginae*. And if *Liophis* and *Dromicus* be brought into so close a proximity as they are by Mr. Cope, *Zamenis* and certain species of *Coronella*, *Leptodira*, &c., cannot be kept at a distance.

even somewhat remote from the labial edge, the sixth and eighth labials being in contact with each other (as in *Diemennia*, where this shield is generally described as a temporal). An elongate temporal shield is in contact with both oculars; five scale-like temporals behind, in two transverse series. Five pairs of the lower labials are in contact with the chin-shields. 160 ventral shields; anal bifid; 66 subcaudals.

The posterior maxillary tooth is the strongest, and somewhat remote from the preceding.

Light brownish olive, minutely dotted with brown. Anterior part of the trunk with twelve pairs of brown spots, which are arranged in a zigzag series; the spots of the two anterior pairs are confluent. Head brown, with a pair of rounded, well-defined, yellowish spots; a yellow line from above the eye, along the canthus rostralis, round the snout; upper lip yellow, separated from the brown colour by a black line; anterior ventral shields with an irregular series of black dots on each side; belly yellow.

The typical specimen is an adult male, 16 inches long. I name the species after my friend Dr. O. Wucherer of Bahia, its discoverer, who informs me that he has seen only three specimens of it, alike in size and colour. The species, therefore, appears to be scarce.

MISCELLANEOUS.

On the Acanthocephali. By RUDOLPH LEUCKART.

THE *Acanthocephali* are the only group of Entozoa the development of which has hitherto eluded the investigations of naturalists. Dujardin and Siebold have indicated that the ova of the *Echinorhynchi* contain embryos very different from their parents; but this constitutes the whole of our knowledge, and the attribution to these animals of a simple metamorphosis by Van Beneden and G. Wagner is a pure hypothesis.

Prof. Leuckart was struck more than once by the presence of an imperfectly developed *Echinorhynchus* in the freshwater *Gammarus* (*G. Pulex*), and he thought that he recognized a certain resemblance between this parasite and the *Echinorhynchus Proteus* of the Carps. He therefore scattered the ova of six or eight *Echinorhynchi* of this species in a bottle containing *Gammari*, and in a few days found a great number of these ova in the intestine of the *Gammari*. He also found that the embryos quitted their envelopes, pierced the wall of the intestine, and passed into the abdominal cavity of these Crustaceans. These young worms are truncated anteriorly, and the truncated surface bears a double bundle of chitinous spines. In the interior of the body there is an accumulation of oval granules, previously indicated by Siebold as a constant organ of the embryos of *Echinorhynchi*: Siebold regarded this organ as an unassimilated residue of the vitellus. To avoid prejudging, it may be called the nucleus.

The young embryo increases in size for about three weeks, after which it undergoes a singular metamorphosis. Its nucleus is elon-